KAISER JOINS THE UHF BOOM

TECHNICIAN ENGINEER

FEBRUARY, 1966

Published for the Employees of the Broadcasting, Recording and Related Industries

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS — AFL-CIO

•••••••• LANDMARKS OF LABOR No. 77 ••••••••

LABOR AIDS THE MARSHALL PLAN • 1947

One of the most significant developments in the field of economic rehabilitation in our time was the establishment and administration of the Marshall Plan, known technically as the Economic Cooperation Administration. The plan was enunciated by General George C. Marshall as Secretary of State and was subsequently implemented by substantial appropriations of foreign aid funds which in 15 years reached tens of billions of dollars.

Labor had a two-fold role in the program of the ECA and the succeeding agencies. Leaders of organized labor were called into consultation by the Government to help in planning the recommendations for legislation. After Congress had appropriated money, labor participated through manning a Labor Division and through the use of labor officers in overseas missions. Working with the nations needing aid required an understanding of the problems of people seeking a restoration of morale and of economic well-being. In this twin task experienced labor people proved invaluable.

The role of labor in the Marshall Plan was not only important, it was also a landmark in the role of labor in the development of national policy and the conduct of our foreign relations.

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TECHNICIAN ENGINEER

VOL. 15, NO. 2
ALBERT O. HARDY, Editor

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the cover

Kaiser Broadcasting's twin operating ventures in UHF are shown on this month's cover. In the left picture, members Tom Bradley (left) and Jimmy Tucker, of Local 1218, man the board at Station WKBD-TV, Detroit. The other picture shows an unidentified member of Local 1241 at work on the WKBS board, Philadelphia. For more about both of these operations, and Kaiser's UHF plans, see page 4.

index

For the benefit of local unions needing such information in negotiations and planning, here are the latest figures for the cost-of-living index, compared with those of the previous year: December, 1965—111.0; December, 1964—109.0.

commentary

"The time has come to pay a special tribute, render a respectful salute to that magic little box called the radio.

"It has come to be looked upon as a sort of country cousin in the family of communications, old-fashioned, even quaint, and with nowhere the glamor in 11 colors of the rainbow of that city slicker, the television set. Yet this small gadget in recent urban and other crises has put the TV receiver to shame.

"The most dramatic case in point, of course, is last November's massive power blackout which deprived some 30 million people of electricity. . . .

"Then came New York's transit strike. In full voice and helpful print the news media concentrated on the crisis but it was the radio which seemed most flexible—relaying traffic conditions to commuters and drivers in stalled cars. . . .

"Any salute to radio must, unfortunately, be counterbalanced by grave indictment of the quality of 'normal' broadcast programming . . . when are they going to put something in their everyday fare besides little synthetic capsules of news, to be swallowed between the commercials . . . and digested during interminable wails of the latest imitator of the beatles?

—from a recent AFL-CIO broadcast by Edward P. Morgan

Published monthly by the International Brotherhood of Electrical Workers, AFL-CIO, 1200 Fifteenth St., N.W., Washington, D. C. 20005, for the employees of the broadcasting, recording, and related industries. Second class postage paid at Washington, D. C. Subscription: $2 per year.

KAISER'S UHF

At Kaiser's Philadelphia UHF facility, WKBS-TV, technician Al Gardner, Local 1241, edits film.

Ever since the FCC made UHF capability a part of every receiver made, TV's top end of the spectrum has begun to look like VHF in the fifties. It's boom country.

One of the leading participants in the UHF explosion is Kaiser Broadcasting, which opened up two stations in 1965, has started construction on a third, and has a construction permit for a fourth in San Francisco.

The two stations currently operating for Kaiser are WKBS-TV, Philadelphia, which went on the air July 6, 1965, and WKBD-TV, Detroit, which fired up January 10. Both of them employ a total of 36 IBEW technicians.

WKBS-TV, broadcasting on Channel 48, maintains offices and studios on South 26th Street, in Philadelphia. The transmitter and 1050-foot tower is in the Roxborough section of the city. Transmitting power of 30 KW is expected to be boosted to 55 KW in early summer. Right now, the transmitter is remotely-controlled from the studio. With delivery of color cameras, the station

WKBS-TV film editors Don Spause (L) and Carl Bistrack at work.

STATIONS

A leader in the field, Kaiser Broadcasting operates two all-IBEW UHF stations, has a third a-building, and a construction permit for a fourth.

will have a total color capability, including live shows, film and tape. WKBS-TV currently employs 16 members of Local 1241.

Kaiser's other operating UHF station, Detroit's WKBD-TV, is located in a new building in Southfield, Michigan, a suburb of Detroit. It employs 20 members of Local 1218, and broadcasts on Channel 50. The 15,000 square foot building houses a 30 KW transmitter and all offices. A 1000-foot tower now mounts a single antenna, but it was designed to carry a candelabra platform for as many as three UHF antennas, and a fourth antenna sidemounted. Construction work on the candelabra is scheduled for this summer.

WYVS-TV, Detroit educational facility, also staffed by members of Local 1218, will move to the WKBD site sometime late this year.

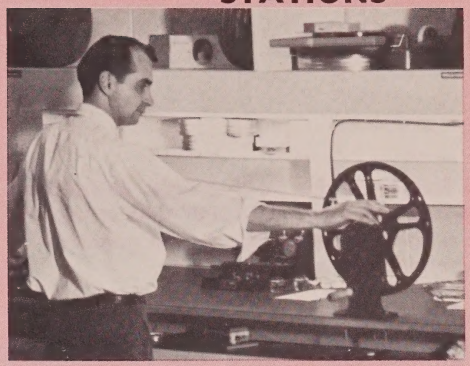
A major factor in WKBD's acceptance in the Detroit market has been its coverage of sports, such as NHL hockey, NBA basketball, and Michigan State University and University of Michigan athletic schedules.

(Above) it's not as perplexing as it appears to members of Local 1241, WKBS-TV. They're cutting in audio-taped commercials. (Below), WKBS-TV editor Bill Baldwin.

Hank Bielecki, WKBS-TV, at the video control in the master control room.

At press time, Kaiser Broadcasting announced signing an option agreement for the Los Angeles franchise for Zenith's systems of subscription TV. The agreement was signed with Teco, Inc., licensed by Zenith to develop its Phonevision system.

KAISER'S UHF STATIONS



(Above) WKBD-TV Detroit film editor Jim Masten, Local 1218. At right, Tom Bradley (left) helps Jim Masten set up scoreboard for popular sports show.

Medicare Enrollment Deadline Close

Aged must sign up by March 31, or wait two more years

Red, white and blue cards that older people will use to show their eligibility for Medicare benefits are now in the mail. Health Insurance identification cards are being mailed first to the 12 million people 65 or over who have already signed up for the voluntary medical insurance to supplement their basic hospital insurance protection under Medicare.

About 19 million people who will be 65 or over next July 1 will have paid-up hospital insurance under Medicare but they have to sign up for the supplementary medical insurance by March 31 to get coverage of their doctor bills and other medical expenses when the program starts in July.

The March 31 enrollment deadline applies to just about everyone over 65, whether or not he has ever worked under the Social Security or Railroad Retirement programs. Those who delay past March 31 will have to wait two years for another chance to get this protection and may have to pay higher premiums. The $3 premium is only one-half the cost of the protection provided by the medical insurance program. The other half is paid by the Federal Government.

Some people may be delaying their enrollment in the voluntary medical insurance program because they do not know how Medicare will affect the Health Insurance they already have. Existing health insurance policies may not pay for some medical services that will be covered by Medicare—such services as treatment at a doctor's office or his calls to a patient's home. Also, many insurance companies and most Blue Cross and Blue Shield plans are going to change so that after July 1 they will pay only for things that Medicare does *not* pay for. Many of these companies and plans are, therefore, now advising older people to sign for Medicare. Anyone with further questions about how Medicare affects his private health insurance should talk to his insurance agent, his union representative or his employer.

After March 31 the Social Security Administration will send Health Insurance cards to people over 65 who are eligible only for the basic Hospital Insurance—those who did not sign up for the voluntary part of Medicare, and will not be eligible for coverage of doctor bills, surgical and other expenses. When the Medicare program begins July 1, beneficiaries will be able to use their health insurance cards when they enter the hospital and—if they are covered by the medical insurance plan—when they go to their doctors.

Medicare's hospital insurance takes care of all but the first $40 charge for a 60-day stay in the hospital and all but $10 a day toward hospitalization from the 61st through the 90th day. It also provides other important benefits.

The medical insurance, costing $3 a month, pays four-fifths of doctor and other medical bills over and above $50 and provides additional benefits not covered by the hospital insurance.

Anyone 65 or over who has not received a medicare enrollment application in the mail or who has mislaid his application should get in touch with the nearest Social Security District Office.

THE LABOR-MANAGEMENT WHIRL

As reported by Les Finnegan in CAVIL-CADE, *distributed by* Press Associates, Inc.

Wrong Pew

● *IN SAN FRANCISCO, it couldn't have happened if it hadn't been Christmastime. A small party was being held by a group of AFL-CIO Convention delegates in a hotel suite following the Convention's final session. Suddenly a union official burst through the door and grabbed a delegate from the American Federation of Musicians. 'Quick, Joe, quick," he gasped, "there's a non-union band down in the lobby." The AFM delegate didn't even wait for the elevator he raced all the way down the stairs and into the lobby. It was a non-union band, all right. It was, in fact, a Salvation Army band that had been playing outside and which had been invited to come into the hotel lobby for a few minutes to get out of the biting cold. The red-faced delegate had to steel himself with a couple of stiff ones at the bar before he could bring himself to go back upstairs and rejoin his friends.*

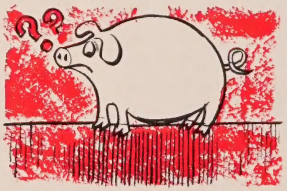
That's a Point

● *IN LONDON, ENGLAND, the Queen's consort, Prince Philip, continued his needling of big business and industry, a needling totally unprecedented from a member of the royal family. Said Prince Philip last week, "The trouble with senior management in England is that there are too many one-ulcer jobs."*

Powder and Paint

● *IN SYDNEY, AUSTRALIA, after decades of trying, women finally made a breakthrough in their campaign for equality of the sexes in the labor movement. For the first time women will be admitted to membership in the Building Trades Union. The victory required concessions from both union and management. Henceforth, builders and contractors will have to provide "adequate powder room facilities" on the construction site. For its part, the union outlawed certain parts of the typically masculine vocabulary. Some words will have to be reported to stewards.*

Birch Barks



● *IN WASHINGTON, D. C., Reed Benson, public relations director for the Washington lobbying office of the John Birch Society, made the first comment ever on the Society by one of its own officials that found unionists in ageement. Said Benson, "Actually, trying to tell the John Birch Society what's good for it is like trying to help a hog on ice."*

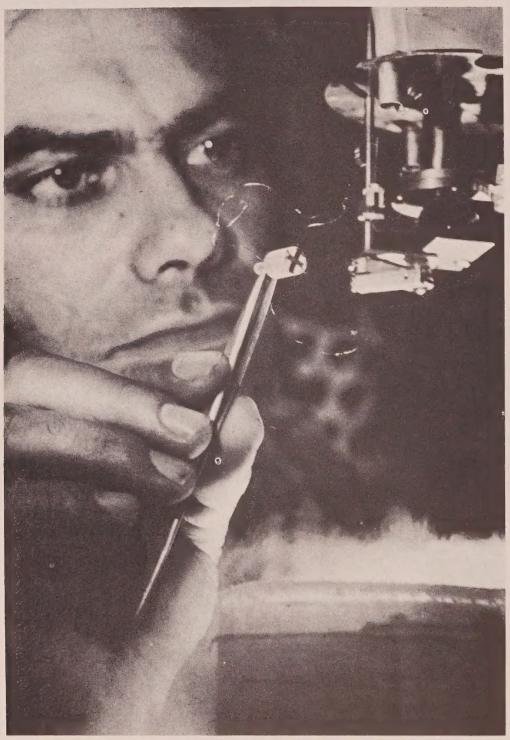
Ape Over Art

● *IN ALBUQUERQUE, N. MEX., union officials said nothing but watched with a wary eye recent developments at the City Zoo. Three young gorillas were purchased for the zoo at a price of $15,000. Two of them were given water color sets to test their intelligence and promptly produced six paintings that drew raves from local art critics. As a result, a business firm paid out a cool $1000 for the first painting, and a second company paid almost as much for another. Following this, City Attorney Frank Horan inquired whether the gorillas shouldn't be considered productive city employees and, therefore, eligible for the pension program, hospitalization insurance, and maybe even unemployment benefits.*

The Sonic Electron

The interaction of phonons—ultrahigh-frequency sound waves—with electrons is opening the way to new products being developed by the electronics industry.

by Bruce Shore



Superconductive tunnel diode fixed to quartz rod is prepared for insertion into microwave cavity. Device generates and detects sound waves oscillating at 70 billion cycles per second when immersed in liquid helium.

Reprinted with permission from ELECTRONIC AGE

A potential cache of new and versatile electronic products based on the interactions that occur between electrons and sound waves propagating through solids has been uncovered and may soon be exploited by the nation's electronic industry. Included in this expected treasure are:

- Acousto-electric oscillators, detectors, mixers, and amplifiers that may spawn a new breed of radio communications equipment.
- Acousto-electric computer memories that may store 50 million bits of information on a handful of quartz rods.
- Solid-state microwave transmitters and receivers that do away with the bulky wave guides, hot electron tubes, and clumsy coaxial cables in modern radar and television installations.
- Sonic masers that generate sound waves so intense they may cut or pulverize metals.
- Acousto-electric photomultipliers that may one day employ sound to amplify light.

At the very least, it appears, mastery of these acousto-electric interactions can be used to improve the quality and performance of present electronic materials and devices. These exciting possibilities stem from the fact that, when an electric field is applied to a hunk of solid matter, free electrons floating aimlessly therein begin to drift purposefully downfield at a rate fixed by the pressure of the field (voltage) and the drag exerted by the sea of atoms around them.

This drag, arising from tiny vibrations of the atoms in the solid, is really a manifestation of sound energy oscillating constantly through the material at frequencies too high to be heard.

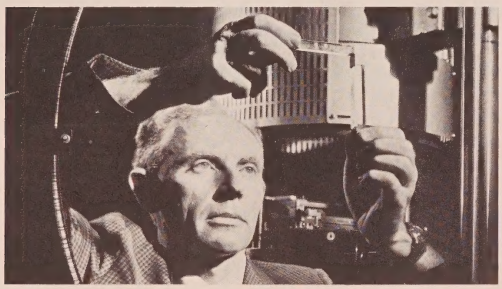
Ordinarily, such vibrations are a nuisance in electronic circuits because they cause heating and electrical resistance in various components. Recently, however, scientists have discovered that in semiconductors such as cadmium sulfide, and in superconductors such as niobium tin, these ultrasonic vibrations can have profound effects on free electrons adrift inside.

In cadmium sulfide, for example, they may form an invisible sound barrier that effectively limits the speed of

free electrons moving through the material to the speed of sound. The phenomenon is reminiscent of that encountered by the aircraft industry 20 years ago when its airplanes were temporarily denied higher speeds by the sound barrier in the atmosphere.

There are significant differences, however. Whereas the atmospheric sound barrier was viewed as an obstacle to progress by aircraft manufacturers, its counterpart in solids (together with other acousto-electric phenomena) is viewed by electronics manufacturers as promising a new source of ways to amplify, switch, and otherwise control electric currents in solids.

A portion of what lies in store has already been realized through the phenomenon of superconductivity—one form or acousto-electric effect produced in certain metals when they are submerged in frigid baths of liquid helium. This phenomenon has been harnessed successfully to create crushing magnetic fields, to store computer data, to amplify microwaves, and has even



Scientist at the David Sarnoff Research Center, Princeton, N. J., holds specially processed quartz rods that may one day lead to the development of a computer memory employing sound as well as electric currents to store millions of bits of information.

been enlisted to track ultrasonic sound waves speeding through certain crystals.

Now, other acousto-electric effects have been unearthed and used experimentally in materials at normal temperatures to amplify sound directly without transforming it first to electric currents, to tune and modulate the intense light beams of lasers, to stimulate the emission of massive laser-like sound waves from certain crystals, and to probe the atomic structures and energy exchanges that occur in solids generally.

In a superficial sense, of course, acoustics and electronics have been teamed more or less from the inception of the electronics industry. The invention of the microphone, the speaker, and the ultrasonic transducer—and their subsequent application to radio, the telephone, the public address system, movie sound tracks, the stereophonic phonograph, and sonar—testify to that. But, this relationship has always had a brute-force aspect. The sound waves acting on the diaphragm of a microphone or the electromagnetic forces acting on the cone of a speaker trigger sonic vibrations that disturb the whole atomic structure of these devices. In neither of these cases do specific acoustic waves interact with specific electrons in any meaningful way. Sound at these frequencies (10 to 20,000 cycles per second) is a bulk phenomenon like ocean tides.

Even at ultrasonic frequencies up to hundreds of millions of cycles per second, sound is still a bulk phenomenon. But, when its frequencies soar into the billion-of-cycles-per-second range—and especially above 10 billion—its vibrational character acquires a radically new dimension. At these levels, the crests and troughs in the sound waves vibrating along the atomic networks that make up the solid state are so tiny and intense that they begin to interact with individual atoms in the networks and even individual electrons.

In fact, it becomes increasingly difficult to think of these perturbations as sound waves at all. Rather, they begin to assume the character of elementary particles, Accordingly, they have come to be called *phonons* in the same way that light waves are now said to consist of elementary particles called *photons*.

Recognition that such sonic waves, or phonons, can oscillate at these high frequencies may be traced to the work of Einstein, Peter Debye, and others in the early 1920s. In studies of atomic vibrations in crystals, these men noted that sound waves can have frequencies as high as 100 trillion cycles per second, or the equivalent, in electromagnetic terms, of infrared light.

There was no inkling at that time that the passage of phonons through a material was invariably associated with an electrical disturbance, however. That connection was not made until 1953 when Dr. Robert Parmenter, then at the Massachusetts Institute of Technology and now a theorist working on the riddle of superconductivity at RCA Laboratories, jolted scientific circles by suggesting the existence of such a disturbance traveling at the same speed and in the same direction as the sound wave causing it. It resulted, he hypothesized, from tiny electrical imbalances in the atomic structure of the solid occasioned by the bunching and thinning of the atoms in response to the rhythmic undulations of the sound energy.

Dubbed "the acousto-electric effect," its existence was confirmed in 1959 by Dr. Gabriel Weinreich, of Bell Laboratories in Murray Hill, N. J., during experiments on germanium, the raw material of the first transistors.

Two years prior to that, in 1957, the phonon concept came into its own when it was cited by Drs. John Bardeen, Leon N. Cooper, and J. Robert Schrieffer, then at the University of Illinois, as the key factor of producing superconductivity. According to their theory, now widely accepted, superconductivity occurs when electrons fall to such low energies in a material that they join together and travel in pairs. The force that binds them, despite their strong electrical antipathy, derives from the constant exchange of a phonon between them. In other words, superconductive electrons exist as partners locked in a kind of ultrasonic embrace.

A more concrete demonstration of phonon-electron interaction occurred in 1961 when Drs. Andrew Hutson, James McFee, and David White, also of Bell Laboratories, directly amplified sound waves in a crystal of cadmium sulfide by applying an electric field to the crystal. What they got, it turned out, was an ultrasonic

microphone-amplifier-speaker all in one.

The following year, Roland Smith, an experimentalist working at RCA Laboratories, discovered further that the mechanism producing this unusual effect also restricts the velocity of free electrons streaming through the crystal to the speed of sound whenever their numbers approach a certain critical density. In 1962, a related effect was seen to occur in the semimetal bismuth by Dr. Leo Esaki of International Business Machines.

As a result of these experiments and the conclusions drawn from them, the following picture has begun to emerge regarding some of the interactions that occur in solids between electrons and high-frequency sound waves.

When an electron slides down the voltage ways, so to speak, of an electrical circuit and splashes into a solid component, it sends shock waves ahead of it just as a ship does when it slides into the water. The pressure it exerts as it bumps against the atoms composing the device creates phonon waves (ultrasonic vibrations) forward of its "bow" and a well-defined phonon wake astern. These are in addition to the sonic ripples already naturally present in the material due to internal heat.

In certain instances, the bow waves may reinforce and amplify the sound waves naturally present or some others introduced from outside. In the one case, such amplified waves may be used by scientists to study the physics of the substance or, in the other, to produce the ultrasonic microphone-amplifier-speaker reported by Bell Laboratories.

With regard to superconductors, it is not the bow waves but the phonon wake that is of interest. What seems to happen is that the two electrons in each superconductive pair whirl round a common center while floating in each other's wake. They achieve their whirling motion by "surfing" on these wakes, as Hawaiian surfboard riders scudding along the brow of a rolling surge.

Though intensive investigation of the sound waves known as phonons has scarcely begun, research has already uncovered the sonic electron for amplifying them and the supersonic electron twosomes that use them to produce superconductivity. With still more such effects sure to be found, the conclusion seems to be inescapable that electrons, unlike children, are often better behaved when they are "heard" and not seen.

FCC Extends Time for Remote Control Rulemaking.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of
Amendment of Part 73 of the
Commissions' Rules with Respect
to Remote Control Operation of
VHF Broadcast Stations

Docket No. 16206
RM-735

ORDER EXTENDING TIME FOR FILING REPLY COMMENTS

1. On September 24, 1965, the Commission issued a Notice of Proposed Rule Making (FCC 65-856), inviting comments in the above-entitled matter by October 22, 1965, and reply comments by November 5, 1965. In an Order released on October 18, 1965, these dates were extended to January 17, 1966, and February 1, 1966, respectively.

2. On February 1, 1966, the National Association of Broadcasters (NAB) filed a Request for Extension of the Time within which to File Reply Comments until April 1, 1966. NAB states that it wishes to "investigate the areas of disagreement" in the comments opposing the proposal made in the Notice for the purpose of "compiling significant data which will be helpful to the Commission in its consideration of the important questions involved." NAB further states that it is anxious to see the proceeding concluded as soon as possible but believes that a "more informative result would be achieved if additional time were granted."

3. We believe that the additional time requested would provide additional data which would be of assistance to the Commission in this proceeding. Accordingly, IT IS ORDERED, this 3rd day of February, 1966, That the time for filing reply comments in this proceeding IS EXTENDED from February 1, 1966, to April 1, 1966.

4. This action is taken pursuant to authority found in Sections 4(i), 5(d)(1) and 303(r) of the Communications Act of 1934, as amended, and Section 0.281(d)(8) of the Commission's Rules and Regulations.

FEDERAL COMMUNICATIONS COMMISSION
Ben F. Waple
Secretary

Released: February 4, 1966

LET THEM KNOW WE

CARE

CARE packages. The word means food, medicine, and essential provisions of life to many people who have contributed generously to the underprivileged people of the world, and to the thankful recipients as well. For 15 years now, the Cooperative for American Relief Everywhere, Inc., a private, non-profit organization, has been saying to some 37 countries that Americans are concerned about their people.

In some areas of the world however, where the absolute essentials of life have been taken care of, there is a need for people to learn how to help themselves to a more stable national economy. This means people learning new skills, or returning to needed old ones after the disruption of war.

With a strong measure of support from organized American labor, CARE has been distributing increasing numbers of tool kits, along with the traditional packages of food and medicine. Although a basic carpentry tool kit was designed back in the early days of CARE, to give back to the wood craftsmen of Europe the tools taken away by World War II, there is a new emphasis on providing tools. They are helping resourceful villagers to set up vocational training schools, develop home-grown industries, and build community facilities.

One of the newest kits provided by CARE is designed for electricians, and contains everything needed for electrical or rudimentary electronic work. In one example of how they are being used, Philippine high school boys are working with them in vocational training courses, under the supervision of U. S. Navy personnel.

One of the neediest areas right now is South Viet Nam. In a recent appeal for support of CARE's Viet Nam effort, AFL-CIO President George Meany called the attention of organized labor to the plight of the war's homeless.

"By the hundreds of thousands, men, women and children have become refugees in their own country," he said. "Fleeing for their lives from the areas of combat, they bear on their faces the shock of having lost their land, all their possessions but the clothes on their backs.'

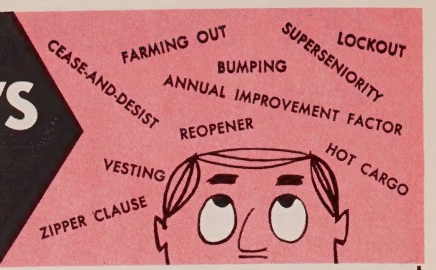
The number of refugees from both North and South is estimated to be over 600,000, and CARE is raising a special $3 million fund for the country, to greatly expand its work. CARE was the first private American aid agency to go into south Viet Nam, in the days before the cease-fire of 1954 ended French efforts to hold the communists in check.

Meany is urging all members of the AFL-CIO to "give their fullest possible support to the CARE campaign." By doing so, he said, "we shall be upholding the historic goal of organized labor in America,—a better life for all."

(Above) a CARE electricians' kit. At the left, Filipino high school students, attending the Laguna School of Arts and Trades, get some instruction from Gary Hancock, Yoeman 3C, with the help of CARE electrical training kit materials.

All contributions to CARE should be sent to: Lee W. Minton, CARE, Inc., 660 First Avenue, New York, N. Y. 10016.

A UNION MEMBER'S DICTIONARY



This is the fifth of a new feature series planned to keep you better informed on the meanings of terms related to collective bargaining, union contracts, and union business. Follow it closely, and your union membership will become more meaningful, and your ability to participate in decisions which affect your future and security will be strengthened.

D

downtime: A period during which a worker is idled because a machine breaks down or the flow of materials is interrupted. In contracts providing incentive pay, provision is made to compensate such workers for such time, under a stated formula.

E

economic strike: One over money issues and working conditions rather than unfair labor practices. Not "protected" under law, and employer may hire and retain replacements unless strike settlement says they must go.

eligibility date: After NLRB sets a date for a union recognition election, it rules on who is eligible to vote. Usually the last payroll period is the yardstick.

emergency dispute: A strike or the threat of a strike which would affect the national health and safety. See fact-finding.

employer interference: An unfair labor practice, it includes barring distribution of union literature or solicitation during non-working time; speeches to employees on company time and property before a representation election unless the union gets equal chance to reply; questioning of employees about union activity; closing or moving the plant, or threatening to do so; circulation of an ant-union petition and requiring employees to sign; unilateral increases in wages; removal of privileges; spying; encouraging or discouraging union membership; firing for union activity.

employer's final offer: The last terms offered by an employer in an attempt to settle a contract dispute. In the case of national emergency disputes, Taft-Hartley requires the NLRB to conduct a secret-ballot vote on this offer among the employees. Rejection has been virtually universal when a like decision has been reached by ordinary union procedures.

equal job opportunity: The elimination of discrimination in employment, by law or by union contract.

equal pay for equal work: The concept, frequently written into contract language, that like work shall command like pay, regardless of sex, race or other individual characteristics. This usually refers to sex differentials, now covered by federal law.

escalator clause: An adjustment of wages in accordance with such factors as cost of living, productivity or material costs.

escape clause: In a maintenance-of-membership agreement, a provision setting a period of time during which union members may withdraw as members, without effect on their employment.

experience rating: Adjustment, according to employer's unemployment or accident record, of the rate employer pays for unemployment insurance or workmen's compensation insurance.

F

fact-finding: Investigation of a labor-management dispute by a board, usually named by a government official (sometimes private individuals chosen by mutual consent), which issues a report describing the points at issue, and sometimes makes recammendations for a solution. Under the Taft-Hartley Act the President must name a Board of Inquiry to investigate a dispute that threatens the nation's health or safety. The Board is required to report its findings to the President. Several states have laws providing for fact-finding in industrial disputes.

Farming-out: See subcontracting.

featherbedding: Pay for work not done or for unnecessary work. Often stretched by management to cover any union limitations on employer practices.

federal labor union: See direct affiliation.

Federal Mediation and Conciliation Service: An independent government agency functioning under the Labor Management Relations Act of 1947, offering machinery for settlement of labor disputes which threaten to involve a substantial work stoppage.

Federation of Organized Trades and Labor Unions: Direct predecessor of the AFL, founded in 1881.

field examiner: An employee of the National Labor Relations Board whose primary duties are to pass on union petitions for an election, conduct certification elections and make preliminary investigation of unfair labor practice charges.

filing requirements: Submission of financial and other information by unions in order to qualify for service under Taft-Hartley Act.

Reprinted with permission from *"Speaking of Labor Unions,"* a reference manual of labor union terms and titles published by the International Labor Press Association, AFL-CIO.

FCC Announces CATV Regulation

Commission Looks to Congress and Proposes Regulation of CATV Systems

On February 15th, the Federal Communications Commission issued a Public Notice to the effect that a Report and Order would shortly be issued, that it was preparing recommended legislation to Congress, and that the Commission's current Rules for CATV would be revised.

The Commission believes that a CATV system should be required to carry the signals of all local television stations whose Grade B contours are within the system's area of coverage and, with some further modifications, proposes that the existing "fifteen-day" rule be changed to one day, with respect to the duplication of programs of local stations.

The Commission gives immediate effect to a Rule for all CATV systems operation commenced after February 15, 1966. This Rule would prohibit systems in the 100 highest-ranking television markets from extending the signals of TV stations beyond their Grade B contours.

The Public Notice also announces that all CATV operations will be required, in the near future, to submit data as to ownership, the business interests of officers, directors and substantial owners, the number of subscribers, the stations carried, and the extent of existing or proposed program origination, by each system.

The Public Notice clearly sets forth the determination of the FCC, on a subject of great importance (and considerable controversy, in the recent past:

> *"To the extent necessary to carry out the regulatory program set forth above, the Commission asserts its present jurisdiction over all CATV systems, whether or not served by microwave relay."*

Commissioner Bartley feels that the Communications Act does not confer jurisdiction over CATV, but endorses legislation which would prohibit a system from originating programs. Commissioner Cox also made a separate statement, upon issuance of the Public Notice, expressing his concern that the action of the Commission is not rigorous enough. Commissioner Loevinger likewise appended a statement, agreeing that the position adopted is a moderate and reasonable compromise but expressing doubt as to the legality of the Commission's assertion of jurisdiction.

FCC Action Immediately Challenged

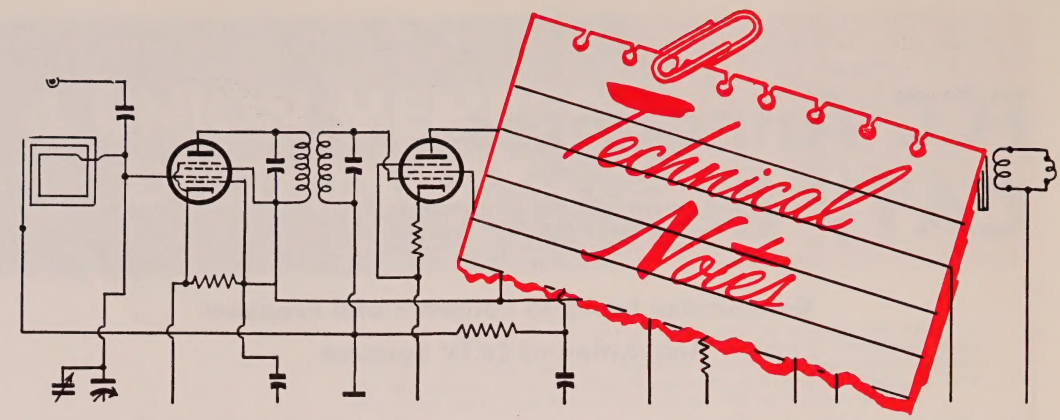
On February 16, a petition was filed with the U. S. Court of Appeals by Midwest Television, Inc. (KFMB-TV, WCIA, WMBD-TV), for remand to the Commission to modify or amend its action.

The Petitioner, Midwest, alleges that it is a party aggrieved because each of its stations is in one of the top 100 television markets and the invasion of Grade B contours has and will reduce the audiences and revenues of such stations. Midwest points out that it has supported the Commission's assertion of authority over CATV, but contends that the FCC has not provided sufficient protection for stations in the 100 markets, for an effective limitation in smaller markets, neither has it provided for effective limitations of CATV systems which have been operating prior to February 16, 1965.

Congressional Hearings Announced

In Congress, Representative Harley Staggers, (D-W. Va.) who is Chairman of the House Commerce Committee, and Senator John O. Pastore, (D-R. I.), who is chairman of the Senate Communications Subcommittee, announced their intention to chair hearings on CATV, almost as soon as the FCC had taken its stand. Staggers said that the plan outlined by the Commission "constituted a praiseworthy effort to strike a proper balance between the positions advocated by the broadcasters on the one hand and CATV Operators on the other.

Senator Pastore has long believed that the Federal Communications Commission should step into the CATV picture. He had been floor manager of a bill proposed in 1960 to regulate the CATV industry, after efforts to prod the FCC into some kind of action had failed. Pastore is generally identified with the anti-CATV operator encampment. "There is no question in my mind," he said in announcing his hearings, "that if the legislation that the Commttee reported . . . had been enacted, many of the questions that are now being raised, as well as the proliferation of the state and municipal regulations in the CATV field, may have been eliminated and CATV allowed to grow in an orderly fashion."



ECHO I STILL THERE

Age hasn't entirely dimmed the luster of the grand old lady of space—Echo I.

Though the 5½-year-old satellite has lost its shape, it still valiantly makes its appointed rounds by orbiting the earth every two hours, the National Geographic Society says. Occasional battering by solar winds and micrometeorites has made Echo's skin look like a wrinkled prune.

To earthbound admirers, the aluminum-coated sphere with a 100-foot diameter originally looked like a bright, twinkling star as it moved through the heavens at 16,000 miles per hour, reflecting the sun's rays.

National Aeronautics and Space Agency officials believe that Echo I has probably been seen by more people than any other man-made object in history, including Egypt's Pyramids and the Empire State Building. Both NASA and the Smithsonian Astrophysical Observatory, which tracks Echo I under a government grant, continue to get queries about the satellite.

Echo I is a perennial favorite of space buffs. Newspapers announce its orbiting schedule; a stamp commemorates it; and one little old lady in Maine goes to bed tranquilly at night "knowing old Echo I is still up there going about its business."

A three-stage Delta rocket hurled Echo I aloft on August 12, 1960. The 124-pound balloon was inflated and released 1,000 miles above the earth's surface to become the world's first passive communications satellite—passive because it acts merely as a signal reflector and has no electronic equipment on board.

President Eisenhower heralded the accomplishment with a 127-word message that bounced coast-to-coast by the passing sphere.

More than 150 experiments followed. Scientists used Echo I for two-way coast-to-coast telephone conversations. The Post Office Department transmitted facsimile photographs and a Christmas letter from Washington, D.C., to Newark. "Shop and mail early," was Echo's timely message.

Echo I completed all the assigned experiments, and proved that a satellite could successfully and routinely relay radio waves beamed from earth.

Some space enthusiasts feel that Echo and its sister satellites have paved the way for a global communications system. Newspapers and mail may be transmitted instantaneously by similar celestial stations before 1970.

Echo I's longevity has amazed even the space experts. Many predicted that the satellite would last only six months. One former doubter says, "The thing will apparently go on forever."

POLE-TO-POLE WHISTLE

When the spring thaw comes to Antarctica, American scientists will resume work on the world's longest radio antenna, under construction 900 miles from the pole to aid in the study of low-frequency waves. The transmitting-receiving antenna is 21 miles long; a simple plastic-coated copper cable laid over snow and ice of the frozen continent. It beats its nearest competitor by at least 10 miles.

Upon completion, the antenna will radiate and receive low-frequency waves similar to those generated naturally by lightning, the source of receiver whistlers. Whistlers get trapped in the earth's magnetic lines of force and bounce back and forth between the North and South poles.

Scientists are thinking that controlled very low frequency waves might be useful for communications when solar radiation blacks out higher frequencies.

PUSH-BUTTON MESSAGES

A unique, self-powered device about the size of a pocket transistor radio has been developed for the U.S. Army to permit voiceless communications between allied jungle fighting groups speaking different languages. The device—called a Jungle Message Encoder-Decoder (JMED)—is used in conjunction with standard Army pack radios to send and receive 32 special five-digit messages. The coded messages transmitted by JMED

make it possible to overcome the communications barrier which exists where friendly troops speak different languages—or dialects—and also provide a means of communicating silently in dense jungle where the enemy may be only a few yards away. RCA's Communications System Division has delivered a number of the devices to the Army Electronics Command, Ft. Monmouth, N. J., for evaluation under a program sponsored by the Advanced Research Projects Agency, Washington, D. C.

JMED employs digital techniques similar to those used in sophisticated communications equipment and in computers. However, the operation of JMED has been kept simple so that it can be used by field personnel with minimum training. To operate it, a soldier in the field sends a selected message by operating five switches on JMED, each capable of transmitting either an "X" or an "0." When the fifth switch is activated, the message is automatically sent and the unit is cleared for the next transmission or reception. The 32 messages, selected to suit the unique needs of jungle troops, contain five digits each and are received on a special display panel on JMED. To read a message, a soldier checks the five-digit code received on his unit against a printed message card. Pictures, symbols or the user's own language on the cards eliminate the need for translators and help avoid misinterpretations, Mr. Simshauser said. The messages or codes can be changed periodically to confuse the enemy.

JMED weighs about three pounds and draws power only during transmission or reception. Rechargeable, self-contained batteries supply enough power to send or receive up to 200 messages. The unit also incorporates automatic error detection.

SUN-POWERED SNOW TESTERS

The U.S. Soil Conservation Service is saving itself time and money, by measuring the water content of snows in Idaho by remote control. Radio transmitters, powered by solar cells, give almost instantaneous readings from several key measurement points in the vicinity of Boise.

Moisture content information is important to the government for forecasts of Spring thaw water runoff, which in turn helps farmers plan irrigation, and governments plan flood control operations.

Before the use of the sun-powered, automatic measuring devices, two-day trips often were required to get to the site of an instrument, by snowmobile. Helicopters were far faster—and almost prohibitively expensive.

NEW WWV TRANSMITTER SITE

Work has just about begun on a new Transmitter building at Fort Collins, Colorado, to house the Government's frequency and time standard broadcast operations. The switch from present WWV Broadcasting facilities at Greenbelt, Maryland, is expected to take place at the beginning of July.

The Bureau says that transmitted frequency time standards will be more accurate from the new site because of its proximity to the Radio Standards Laboratory at Boulder, Colo., where the national standards are kept.

The new station will have eight transmitters, built by the Technical Material Corporation; two 88-foot monopole antennas, constructed by Collins Radio for standby use, and six additional single-frequency antennas and towers made by the Rhon Manufacturing Co.

BASIC TRANSISTOR AMP PATENT

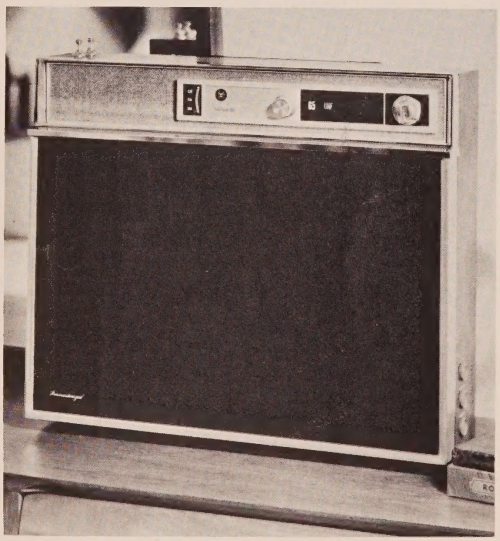
A basic patent on an electrical circuit governing the efficient operation of transistor amplifiers—devices used extensively in missile tracking, in the operation of automated industries and in scientific instruments—was granted recently to Northwestern University biophysicist Franklin Offner.

Application for the patent (No. 3,225,305) was filed with the U. S. Patent Office more than 11 years ago, Offner said.

His invention overcame the temperature instability of early transistors, which prevented their use in amplifiers where stability was essential.

The one claim in the newly-granted patent covers the use of two transistors in a single amplifier stage, with a resistor common to their two emitters, Offner said. This was shown to give the desired independence from the effect of temperature.

BLACK-FACE TV RECEIVER



Known as the Jet Set, this 19-inch fully transistorized portable television receiver is one of the highlights of the 1966 line of home entertainment products. The new receiver has black glass mounted across the front to enhance its appearance while turned off and to soften and clarify the picture when turned on.

Photo courtesy Westinghouse

STATION BREAKS

DON'T DO IT!

A station in the midwest recently had a near-electrocution because an interlock on a remodeled transmitter had a bypass switch installed.

The remodeling had included substitution of air-cooled for water-cooled tubes in the final amplifier. When this substitution had been completed some instability appeared, despite the installation of parasitic oscillation suppressors. To make matters worse, the "old" mechanical grounding switch operated by the compartment door was left mounted, but new access to the high voltage was still available, ungrounded.

A technician who had not worked at the transmitter for some time was assigned to a shift there some time later, and unaware of the interlock-defeat switch, went after a defective parasitic suppressor in the course of operation. Near completion of the repair, the filaments were turned on —to minimize delay in getting back on the air— and, unknown to him, the plate time delay relay began to count down. Had the interlocks not been shorted out, he would have been safe. But they were bypassed and the plate voltage came on.

He was relatively lucky—the voltage got only one arm. The inside of his right forearm was burned, to the extent that after two weeks' hospitalization he was again able to be about. But he has what appears to be permanent damage and his manual dexterity is much less than normal.

Don't let it happen to you—everyone knows interlock defeats are illegal, and should know they're dangerous. Don't be "right" and "efficient" —be *sure* and stay alive and unharmed!

BROADCAST MAN IN THE WHITE HOUSE

President Johnson's new press aide, Robert Fleming —whose official title is Deputy News Secretary, despite the fact that he is expected to take over the lion's share of press contact work for Bill Moyers—got the job at least partly because of his radio and TV background. The president who shuns the formal press conference (see the TECHNICIAN ENGINEER for January, page 11) has a real romance with the broadcast media, for spot appearances or folksy discussions of national issues with the people at the grass roots. Johnson would rather that the image were not strained through the cynical Washing reporter's interpretive sieve.

Fleming comes to the White House after a varied background in the press, including years in the print media. He was graduated in 1957 to ABC Washington Correspondent after he made some suggestions, in a TV interview program, about what was wrong with broadcast news. After three years of corresponding with a mike, Fleming became the Washington Bureau Chief for ABC.

With high regard now for broadcast media news reporting ("broadcasting has attracted some very experienced newspapermen . . . and has begun to raise its own crop of bright, experienced newsmen . . ."). Fleming also has apparently been converted about Johnson's use of the media—especially the President's habit of calling impromptu TV appearances which throw the networks' programming into a tizzy. Fleming has been critical of this in the past.

Now, he says, "I've changed my mind. Seriously, though· I think the problem was mostly not being informed of the mechanics of setting up a broadcast. Maybe now it'll be different."

LAST LAUGH

"I owe my employer this month. My wages didn't quite cover my payroll deductions!"